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ABSTRACT**"An embolic protection device"**5 **(Fig. 41)**

10 An embolic protection device has a collapsible filter element (105) mounted on a carrier such as a guidewire (101). The filter element (105) collapses into the outer end of a catheter (118) for deployment and retrieval through a vascular system of a patient. The filter element (105) has a collapsible filter body with a proximal inlet end and a distal outlet end. The proximal inlet end has inlet openings sized to allow blood and embolic material enter the filter body. The outlet end has outlet openings which allow through passage of blood but retain embolic material within the filter body. After use, the catheter (118) is movable along the guidewire (101) to engage the proximal end of the filter element and close the inlet openings before sliding over the filter element from the proximal end to the distal end to progressively collapse the filter body on the guidewire (101) for retrieval. The filter element (105) may conveniently be mounted on a tubular sleeve (104) which is slidable and rotatable on the guidewire (101) between spaced-apart stops (106, 120) on the guidewire (101) which allows some manipulation of the guidewire independently of the filter when the filter is in use.

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